WHAT IS CLAIMED IS:

1. A method of fitting a plurality of sub-population functions to data, comprising the steps of:

defining a plurality of functions according to a plurality of function parameters and a total number of functions;

generating an objective function based on said plurality of function parameters;

determining a fitting error between said objective function and the data, and

comparing said fitting error to stopping criteria to determine if said fitting error is satisfied.

2. The method of Claim 1 further comprising the step of altering said plurality of function parameters and said total number of functions and repeating said generating, determining, and comparing steps if, at said comparing step, said fitting error does not satisfy said stopping criteria..

3. The method of Claim 1 further comprising the steps of specifying at least a first threshold value delineating said plurality of functions.

4. The method of Claim 3 wherein said at least a first threshold value is calculated based upon the likelihood of misclassification of data.

5. The method of Claim 3 further comprising the step of segmenting the data according to said at least a first threshold value.

6. The method of Claim 1 wherein said objective function is defined as a vector representation of said plurality of function parameters.

7. The method of Claim 2 wherein said altering step is accomplished by evolving said plurality of function parameters and said total number of functions according to a genetic algorithm.

8. The method of Claim 7 wherein said genetic algorithm evolves said plurality of function parameters through mutation and crossover.

9. The method of Claim 1 wherein said plurality of functions are normal distributions, and said plurality of functions parameters include the mean and standard deviations of said normal distributions.

10. The method of Claim 1 wherein said comparing step includes the utilization of a statistical f-test to evaluate the relative contribution of each of said plurality of functions in comparison of said fitting error and the data.

11. The method of Claim 1 wherein the data is organized as a histogram.

12. The method of Claim 1 wherein said stopping criteria are defined by a fitness function.

13. The method of Claim 12 wherein said fitness function is optimized to minimize the magnitude of the fit error between said objective function and the data.

14. An apparatus for fitting a plurality of sub-population functions to data, comprising:

means for defining a plurality of functions according to a plurality of function parameters and a total number of functions;

means for generating an objective function based on said plurality of function parameters;

means for determining a fitting error between said objective function and the data, and

means for comparing said fitting error to stopping criteria to determine if said fitting error is satisified.

15. The apparatus of Claim 14 further comprising means for altering said plurality of function parameters and said total number of functions if said means for comparing determines that said fitting error is not satisfied, said apparatus operable to said generating, determining, and comparing operations.

16. The apparatus of Claim 14 further comprising means for specifying at least a first threshold value delineating said plurality of functions.

17. The apparatus of Claim 16 wherein said at least a first threshold value is calculated based upon the likelihood of misclassification of data.

18. The apparatus of Claim 16 further comprising means for segmenting the data according to said at least a first threshold value.

19. The apparatus of Claim 14 wherein said objective function is defined as a vector representation of said plurality of function parameters.

20. The apparatus of Claim 15 wherein said means for altering operation is accomplished by evolving said plurality of function parameters and said total number of functions according to a genetic algorithm.

21. The apparatus of Claim 20 wherein said genetic algorithm evolves said plurality of function parameters through mutation and crossover.

22. The apparatus of Claim 14 wherein said plurality of functions are normal distributions, and said plurality of functions parameters include the mean and standard deviations of said normal distributions.

23. The apparatus of Claim 14 wherein said means for comparing includes the utilization of a statistical f-test to evaluate the relative contribution of each of said plurality of functions in comparison of said fitting error and the data.

24. The apparatus of Claim 14 wherein the data is organized as a histogram.

25. The apparatus of Claim 14 wherein said stopping criteria are defined by a fitness function.

26. The apparatus of Claim 25 wherein said fitness function is optimized to minimize the magnitude of the fit error between said objective function and the data.

27. A method of specifying thresholds for segmenting a digital image, comprising the steps of:

producing a histogram of the image, having histogram data;

defining a plurality of functions according to a plurality of function parameters and a total number of functions;

generating an objective function based on said plurality of function parameters;

determining a fitting error between said objective function and the histogram data;

comparing said fitting error to stopping criteria;

altering said plurality of function parameters and said total number of functions, and repeating said generating, determining, and comparing steps if said fitting error does not satisfy said stopping criteria, and

specifying at least a first threshold value delineating said plurality of functions if said fitting error satisfies said stopping criteria.

28. The method of Claim 27 wherein said at least a first threshold value is calculated based upon the likelihood of misclassification of said histogram data.

29. The method of Claim 27 wherein said objective function is defined as a vector representation of said plurality of function parameters.

30. The method of Claim 27 wherein said altering step is accomplished by evolving said plurality of function parameters and said total number of functions according to a genetic algorithm.

31. The method of Claim 30 wherein said genetic algorithm evolves said plurality of function parameters through mutation and crossover.

32. The method of Claim 27 wherein said plurality of functions are normal distributions, and said plurality of functions parameters include the mean and standard deviations of said normal distributions.

33. The method of Claim 27 wherein said comparing step includes the utilization of a statistical f-test to evaluate the relative contribution of each of said plurality of functions in comparison of said fitting error and the data.

34. The method of Claim 27 wherein said stopping criteria are defined by a fitness function.

35. The method of Claim 34 wherein said fitness function is optimized to minimize the magnitude of the fit error between said objective function and the data.

36. An apparatus for determining thresholds for segmenting a digital image, comprising:

means for producing a histogram of the image, having histogram data;

means for defining a plurality of functions according to a plurality of function parameters and a total number of functions;

means for generating an objective function based on said plurality of function parameters;

means for determining a fitting error between said objective function and the histogram data;

means for comparing said fitting error to stopping criteria;

means for altering said plurality of function parameters and said total number of functions, and repeating said generating, determining, and comparing operations if said fitting error does not satisfy said stopping criteria, and

means for specifying at least a first threshold value delineating said plurality of functions if said fitting error satisfies said stopping criteria.

37. The apparatus of Claim 36 wherein said at least a first threshold value is calculated based upon the likelihood of misclassification of said histogram data.

38. The apparatus of Claim 36 wherein said objective function is defined as a vector representation of said plurality of function parameters.

39. The apparatus of Claim 36 wherein said altering operation is accomplished by evolving said plurality of function parameters and said total number of functions according to a genetic algorithm.

40. The apparatus of Claim 39 wherein said genetic algorithm evolves said plurality of function parameters through mutation and crossover.

41 The apparatus of Claim 36 wherein said plurality of functions are normal distributions, and said plurality of functions parameters include the mean and standard deviations of said normal distributions.

42. The apparatus of Claim 36 wherein said means for comparing includes the utilization of a statistical f-test to evaluate the relative contribution of each of said plurality of functions in comparison of said fitting error and the data.

43. The apparatus of Claim 36 wherein said stopping criteria are defined by a fitness function.

44. The apparatus of Claim 43 wherein said fitness function is optimized to minimize the magnitude of the fit error between said objective function and the data.